UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,621	01/17/2002	Gang Herbert Lin	3123-297	3057

22442 7590 12/16/2003

SHERIDAN ROSS PC
1560 BROADWAY
SUITE 1200
DENVER, CO 80202

EXAMINER	
BERNATZ, KEVIN M	

ART UNIT	PAPER NUMBER
1773	

DATE MAILED: 12/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/052,621	LIN ET AL.	
	Examiner	Art Unit	
	Kevin M Bernatz	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 53-133 is/are pending in the application.

4a) Of the above claim(s) 79-81;103-105 and 123-125 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 53-75,78,82-102,106-118,126,128 and 131-133 is/are rejected.

7)☒ Claim(s) 76,77,119-122,127,129 and 130 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. Amendments to the specification and claims 53, 57, 61 – 63, 66, 68, 78 – 81, 84, 88, 92, 96, 102 – 105, 110, 116, 119 and 126 - 133, filed on September 23, 2003, have been entered in the above-identified application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Specification

3. The amendment filed September 23, 2003 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the change of units from memu/cm^3 to emu/cm^3. Applicant is required to cancel the new matter in the reply to this Office Action. While the Examiner acknowledges that the discrepancy in the disclosed Mr, t and Mr*t values *may* have resulted from the improper use of "memu" versus "emu", the discrepancy would also have resulted from improper numerical values reported for any one of the three variables. Since there is no evidence that the change necessarily resulted from the mistaken units, and only the mistaken units, the Examiner deems that such an amendment is improper under 35 U.S.C. 132.

Claim Objections

4. Claims 76, 77, 119 – 122, 127, 129 and 130 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 61, 62, 88 and 110 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, there is no support for the change from "memu" to "emu", for the reasons described above in Paragraph 3.

7. Claim 62 is also rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a magnetic ***moment*** of 0.2 – 1.0 memu/cm^2, does not reasonably provide enablement for a magnetic ***moment*** of 100 – 600 emu/cm^3. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. The Examiner notes that a range of 100 – 600 emu/cm^3 appears to

be for the magnetic ***remanence*** and not the magnetic ***moment*** (see claims 110 and 122, for example).

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claim 75 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 75 recites the limitation "the underlayer" in line 2. There is insufficient antecedent basis for this limitation in the claim since the base claim no longer recites the presence of an underlayer. For purposes of evaluating the prior art, the Examiner has interpreted this claim to require both a nickel-phosphorus (NiP) layer and an underlayer deposited between the substrate and the magnetic layer, in that order.

Claim Rejections - 35 USC § 102

10. Claims 53, 63, 64, 66, 68, 75, 78, 82 – 85, 91, 92, 99, 101, 102, 126 and 131 – 133 are rejected under 35 U.S.C. 102(b) as being anticipated by Aida et al. (JP '344 A). See provided English Translation of JP '344 A, though the Examiner notes that the English Translation has "coercivity" mistranslated through-out as "magnetic remanence", even though the designation (Hc) and units (Oe) are clearly directed to the coercivity (*e.g. compare Paragraph 24 of the Japanese Publication, the Machine Translation previously provided and the presently provided English Translation*).

Regarding claims 53, 68 and 126, Aida et al. disclose a disk for information storage (*Page 1 – Abstract*), comprising a non-magnetic base (i.e. applicants' "substrate") (*Paragraph 0007*) and a magnetic recording film (i.e. applicants' "information layer for containing information") (*Paragraph 0007*), wherein (ii) the information layer has a thickness that increases progressively from an inner disk diameter to an outer disk diameter (*Figure 7*). See Figure 1, below, for a better clarity on why applicants' claim language reads on the Aida et al. invention. The Examiner notes that "an inner disk diameter" and "an outer disk diameter" have been given the broadest reasonable interpretation in view of the as-filed disclosure and are not limited to the innermost and outermost points on the disk, merely to two points located at different radial distances (see Figure 1, below). Aida et al. teach that the product of the coercivity (Hc) x magnetic layer thickness (t) can be varied as shown in Figure 1 below, by either varying the coercivity, the magnetic layer thickness, or both (*Paragraphs 0026, 0027 and 0030*). Therefore, Aida et al. teach that the magnetic layer thickness can vary as shown in Figure 1 below, resulting in a recording medium reading on applicants' claimed limitations.

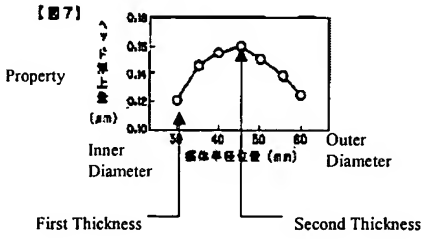

Figure 1: Reproduction of Figure 7 from Aida et al. showing "first" and "second" thickness locations.

Regarding claim 63, the Examiner notes that condition (i) is not positively recited so this claim does not require the specifics of the limitations directed to (i) in claim 53. Hence, claim 63 merely claims that the disk has a coercivity, which Aida et al. discloses (*Paragraphs 0006 and 0024*).

Regarding claims 64, 66 and 99, Aida et al. disclose that to obtain the gradient in Hc*t, that the underlayer thickness can be decreased to increase the coercivity (*Paragraph 0036*). This could be accomplished by decreasing the underlayer thickness from the "first thickness" in Figure 1, above to the "second thickness" point.

Regarding claim 75, Aida et al. disclose a NiP layer between the substrate and an underlayer (*Paragraph 0021*).

Regarding claims 78 and 102, Aida et al. disclose varying the properties in a substantially linear manner (*Figure 6*).

Regarding claims 82, 83 and 101, the reported areal recording density is a function of the track width and track density and is not a property solely of the media, per se, and therefore not further limiting in so far as the structure of the product is concerned.

Regarding claims 84, 91, 92 and 94, Aida et al. teach embodiments wherein the magnetic layer thickness, t, can be varied as shown in Figure 1, above, while maintaining a uniform magnetic alloy for the magnetic layer, and hence substantially uniform magnetic remanence. The total variance is taught to be a minimum of 5%, preferably around 10% (*Page 1 – Composition and claim 2 and Paragraphs 0015 and 0026*). The Examiner notes that the magnetic moment is the magnetic remanence, Mr,

times the magnetic layer thickness, t, or Mrt. Since Mr is approximately constant for the entire radius, but the "first thickness" in Figure 1 above is less than the "second thickness", the Mrt value at "a first inner radial location" (i.e. the first thickness data point in Figure 1, above) will be less than the Mrt value at "the second outer radial location" (i.e. the second thickness data point) and this difference will be a minimum of 5%, preferably around 10%.

Regarding claim 85, the "bit length" is a function of the track density and head spacing and is not a property solely of the media, per se, and is therefore not further limiting in so far as the structure of the product is concerned.

Regarding claims 131 – 133, the limitation(s) "is configured to operate exchange information with a magnetoresistive head" is (an) intended use limitation(s) and is not further limiting in so far as the structure of the product is concerned. Note that "in apparatus, article, and composition claims, intended use must result in a ***structural difference*** between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. ***If the prior art structure is capable of performing the intended use, then it meets the claim***. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art." [emphasis added] *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963). See MPEP § 2111.02. In the instant case, since the prior art is a magnetic recording medium, the Examiner deems that it can clearly meet the limitation of "wherein the

information layer is configured to operate exchange information with a magnetoresistive head" since magnetoresistive heads are widely utilized to read/write to magnetic media.

Claim Rejections - 35 USC § 103

11. Claims 69 – 74, 93, 95 and 100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aida et al. (JP '344 A) as applied above, and further in view of Moroishi et al. ('324).

Aida et al. is relied upon as described above. Aida et al. further teaches that the variation in the Hc*t property from the high to low should be at least 5%, preferably around 10% (*Page 1 – Composition and Claim 2 and Paragraphs 0015 and 0026*).

Aida et al. fail to disclose the thickness of the information layer (claims 69 and 93), the thickness of the underlayer (claim 100) or a dual-layered recording medium meeting applicants' claimed structural limitations (claims 70 – 74).

However, regarding claims 70 – 74, Moroishi et al. teach that the claimed structural limitations (*Figure 1*) is known in the art for high density, low noise recording media (*col. 1, lines 31 – 46 and col. 6, lines 56 – 65*). Regarding claims 69, 93 and 100, Moroishi et al. teach information layer and underlayer thickness values meeting applicants' claimed limitations are capable of suppressing noise generation upon reproducing recorded signals as well as providing good magnetic properties (*col. 1, lines 5 – 15; col. 7, lines 1 – 14; and col. 9, lines 1 – 12*).

Regarding claim 95, Moroishi et al. teach the importance of optimizing the Mrt value to be near 1.0 (*Table 1 and col. 14, lines 50 - 54*). The Examiner deems that it

would have been obvious to one having ordinary skill in the art to have determined the optimum value of a results effective variable such as the Mrt through routine experimentation, especially given the teaching in Moroishi et al. regarding the desire to utilize a value near 1.0 to achieve improved magnetic characteristics. *In re Boesch*, 205 USPQ 215 (CCPA 1980); *In re Geisler*, 116 F. 3d 1465, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997); *In re Aller*, 220 F.2d, 454, 456, 105 USPQ 233, 235 (CCPA 1955).

12. Claims 53 – 59, 63, 64, 66, 67, 75, 78, 82 – 86, 89, 91, 96, 99 - 102, 106 – 108, 111, 113, 116 - 118, 128 and 131 – 133 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bloomquist et al. ('009) in view of Lal et al. (U.S. Patent No. 5,324,593).

Regarding claims 53 – 55, 57 – 59, 63, 84, 86, 89, 96, 106 – 108, 111, 113 and 128, Bloomquist et al. disclose a disk for information storage (*col. 16, lines 18 - 31*), comprising a non-magnetic base (i.e. applicants' "substrate") (*col. 51, lines 59 - 60*) and a magnetic recording film (i.e. applicants' "information layer for containing information") (*col. 16, lines 18 - 31*), wherein the disk has at least one recording parameter that varies radially outward (*col. 16, lines 32 – 43: "the radial coercivity decreasing in a radial outward direction from inner to outer diameters on the disc"*). Regarding the limitation "substantially constant along the length of a selected radial track" (claim 55), since Bloomquist et al. disclose varying the coercivity by varying the composition (claims 59, 89 and 111) deposited in a radial manner (*col. 16, lines 35 – 38*), the radial tracks would possess substantially constant properties since a single track is at a constant radius, r,

around the disk which would possess a substantially constant composition. I.e. Bloomquist et al. does not teach varying the composition in both the radial and circumferential direction, only the radial direction.

Bloomquist et al. fail to disclose varying two recording properties such that they vary inversely with each other.

However, Lal et al. teach that the magnetic remanence is a measure of the signal amplitude which can be read from isolated domains (*col. 1, lines 18 – 24*) and that the formation of a recording medium such that the magnetic remanence increases on progressing from the inner to the outer diameter of the disk results in a medium possessing improved overwrite and noise characteristics (*col. 2, lines 44 – 51; col. 8, line 52 bridging col. 9, line 16; and col. 9, lines 56 - 67*). I.e. Lal et al. teach varying the magnetic remanence inversely to how the coercivity is taught to vary in the Bloomquist et al. invention. Lal et al. further teach that the variation of the magnetic remanence is independent of the behavior of the coercivity (*Figures 5 and 9; col. 9, lines 17 – 30; and Examples*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant(s) invention to modify the device of Bloomquist et al. to produce a medium wherein the coercivity and magnetic remanence vary inversely in the radial direction as taught by Lal et al. since such a medium would possess improved overwrite and noise characteristics.

Regarding claims 56, 91 and 118, since Bloomquist et al. teach a constant magnetic layer thickness, t, and the magnetic moment is equal to Mr*t, the magnetic

moment would necessarily vary in an identical fashion to the magnetic remanence (i.e. t = constant at all radial positions).

Regarding claims 64, 66, 67, 99 and 116, Bloomquist et al. disclose an underlayer having a thickness that decreases from an inner radial location of the disk to an outer radial location of the disk (*col. 20, lines 48 – 60: "the resulting chromium underlayer is somewhat thicker at inner than outer radial position of the substrates"*).

Regarding claim 75, Bloomquist et al. disclose using nickel-phosphorous plated substrates meeting applicants' claimed structural limitations (*col. 1, lines 24 – 27 and col. 51, lines 60 – 61*).

Regarding claims 78 and 102, Bloomquist et al. disclose a substantially linear variation in the coercivity (*col. 20, lines 40 – 43*) and it would have been obvious to vary the magnetic remanence in a substantially linear manner so that all the properties would change gradually from the inner to the outer radius as the head spacing changed gradually from the inner to outer radius (*Lal et al., col. 9,lines 56 – 68*).

Regarding claims 82, 83, 85 and 101, the reported areal recording density and bit length are functions of the track width, track density and head spacing and are not properties solely of the media, per se, and therefore not further limiting in so far as the structure of the product is concerned.

Regarding claims 100 and 117, Lal et al. teach using an underlayer meeting applicants' claimed thickness limitation inorder to produce high coercivity, remanence and loop squareness (*col. 4, lines 18 – 25*).

Regarding claims 131 – 133, the limitation(s) "is configured to operate exchange information with a magnetoresistive head" is (an) intended use limitation(s) and is not further limiting in so far as the structure of the product is concerned for the reasons cited above.

13. Claims 87, 94 and 109 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bloomquist et al. in view of Lal et al. as applied above, and further in view of Aida et al. (JP '344 A). See provided English translation of JP '344 A noting the translation error mentioned above (see Paragraph 10).

Bloomquist et al. in view of Lal et al. is relied upon as described above.

Regarding claims 87, 94 and 109, neither Bloomquist et al. nor Lal et al. disclose the relative values of Mr, and hence Mrt, at the inner and outer radial locations.

However, Aida et al. teach that in recording media possessing gradients in properties, preferably the variance between the minimum and maximum values (i.e. inner and outer radial locations in Bloomquist et al.) should be at least 5%, preferably 10% inorder to possess uniform properties for all the recording tracks (*Page 1 – Composition and claim 2 and Paragraphs 0015 and 0026*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Bloomquist et al. in view of Lal et al. to utilize a variance in the magnetic remanence or moment meeting applicants' claimed property limitations as taught by Aida et al. since such a variation allows for uniform properties for all the recording tracks.

14. Claims 61, 88, 95 and 110 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bloomquist et al. in view of Lal et al. and Aida et al. as applied above, and further in view of Wu et al. ('422).

Bloomquist et al. in view of Lal et al. and Aida et al. is relied upon as described above.

Regarding claims 61, 88 and 110, Bloomquist et al. in view of Lal et al. and Aida et al. fail to disclose a magnetic remanence value meeting applicants' claimed emu/cm^3 limitation.

However, Wu et al. teach the importance of minimizing the Mrt, which can be achieved by either minimizing the Mr or the thickness values (*col. 4, lines 9 – 26; Table 1 and claims 11 and 12*). Wu et al. further reports preferably obtaining an Mrt value of 0.26 memu/cm^2 to achieve superior recording performance, which were achieved for film thickness values of 50 Å (*col. 5, lines 6 – 15 and lines 26 – 55*). The Examiner notes that since Mr*(50 Å) = 0.26 memu/cm^2, Mr can be calculated to equal ~520 emu/cm^3.

It would therefore have been obvious to use Mr values meeting applicants' claimed property ranges, since Wu et al. teach that using Mr values within applicants' claimed range can result in magnetic layers having a minimized Mrt value, and hence superior recording performance and capable of high recording density.

Regarding claim 95, Wu et al. teach controlling the Mrt values to within applicants' claimed property limitations inorder to produce a recording medium

possessing a combination of optimized properties suitable for superior recording performance and capable of high recording density (*Figures 3A – 3C and 4A – 4C; col. 4, lines 9 – 26 and col. 5, lines 6 – 15 and 26 – 55*).

15. Claims 60, 90 and 112 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bloomquist et al. in view of Lal et al. as applied above, and further in view of Murata et al. ('738 A1). See provided English Translation of JP '738 A1.

Bloomquist et al. in view of Lal et al. is relied upon as described above.

Neither Bloomquist et al. nor Lal et al. disclose a CoCrPtTaB alloy meeting applicants' claimed composition limitations.

However, Murata et al. teach CoCrPtTaB alloys with high coercive force, increased recording density and less noise, wherein the composition possesses overlapping Co, Pt, Ta and B concentration values, as shown in Table 1, below (*Page 1 – Composition and Claim 1*). Murata et al. further teach the effects of varying the various alloy components on the magnetic properties, including Cr concentrations meeting applicants' claimed limitations (*Figure 1 – 5, and especially Figure 3*).

Table 1: Comparison of claimed and disclosed CoCrPtTaB alloys

	Co	Cr	Pt	Ta	B
Claimed	~60 – 80	~0.5 – 5	~ 1 – 10	~0.5 – 5	~0.5 – 5
Murata et al.	~48 – 90.4	~8 – 20	~1 – 15	~0.1 – 8	~0.5 - 9

The Examiner notes that Murata et al. teach that the amount of each element can be varied to affect the magnetic properties in a CoCrPtTaB alloy (*Figures*). Therefore, the Examiner deems that it would have been obvious to one having ordinary skill in the art to determine an amount of each element meeting applicants' claimed composition limitations by optimizing the results effective variables through routine experimentation depending on the desired combination of magnetic properties as shown by Murata et al. above.

16. Claims 65, 97, 98, 114 and 115 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bloomquist et al. in view of Lal et al. as applied above, and further in view of Chang et al. ('978 A1).

Bloomquist et al. in view of Lal et al. is relied upon as described above.

Neither Bloomquist et al. nor Lal et al. disclose coercivity and squareness values meeting applicants' claimed limitations.

However, Chang et al. teach the importance of having a high coercivity greater than 3000 Oe and a high squareness (*Paragraphs 0003 and 0005*). Therefore, the Examiner deems that it would have been obvious to one having ordinary skill in the art to determine an amount of the coercivity value or squareness value meeting applicants' claimed property limitations by maximizing/optimizing the results effective variable through routine experimentation, especially given the teaching in Chang et al. regarding the importance of these parameters. The Examiner notes that the maximum value of the squareness is 1.0.

Allowable Subject Matter

17. The following is a statement of reasons for the indication of allowable subject matter: regarding claims 76, 77, 119 – 122, 127, 129 and 130, the prior art fails to teach or render obvious the combination of limitations present in these claims. Specifically, while the prior art provides motivation for (1) varying the magnetic layer thickness to meet applicants' claimed structural limitations (*Aida et al.*); (2) varying the underlayer thickness to meet applicants' claimed structural limitations (*Bloomquist et al.*); or (3) varying two properties inversely (*Bloomquist et al. in view of Lal et al.*), the prior art of record fails to teach or render obvious the combination of varying (1) and (2) (claims 127, 129 and 130) simultaneously or (1) and (3) simultaneously.(claims 76, 77 and 119 – 122).

Response to Arguments

18. The rejection of claim 62 under 35 U.S.C § 112(1st Paragraph)

Applicants argue that the correct units should have been "emu" and not "memu" making the disclosed theoretical range 0.06 to 1.8 memu/cm^2, drawing support from the claimed range of 0.2 to 1.0 memu/cm^2. The Examiner respectfully disagrees.

The Examiner notes that the discrepancy can result from incorrect thickness values, Mr values or Mrt values and that there is no evidence to explicitly support applicants' arguments that the discrepancy was exclusively a result of an error in reporting the units of memu vs. emu.

19. The rejection of claims 53 - 125 under 35 U.S.C § 102(b) and/or 103(a) – Aida et al. ('344 A), either alone or in view of various references

With regard to some of the above claims, the above noted rejection has been withdrawn because applicant(s) amendment(s) have set forth new limitations (e.g. "vary inversely") no longer anticipated, nor rendered obvious, by the above noted rejection; and in view of applicant(s) arguments, which have been found persuasive. Specifically, applicant(s) argue that the claimed invention does not disclose nor possess Mr or Mrt values which vary inversely to the coercivity, which is deemed to not be anticipated, nor rendered obvious, by the above noted rejection.

With regard to claims 53, 63, 64, 66, 68, 75, 78, 82 – 85, 91, 92, 99, 101, 102, 126 and 131 – 133, applicant(s) argue(s) that Aida et al. fails to teach the increase in thickness of the magnetic layer from *the* inner to *the* outer radii and the simultaneous variation of both the magnetic layer thickness and the underlayer thickness as a function of radius. The examiner respectfully disagrees.

Applicant(s) are reminded that the rejection is based on the entire reference(s) and not just a piece meal analysis of the cited reference(s). In the instant case, Aida et al. disclose that the product of Hc*t should vary in the radial direction and teach several methods of varying the product, either by varying the coercivity alone, the thickness alone or by varying both the thickness and coercivity simultaneously (see Paragraph 10, above). In addition, the Examiner notes that applicants' claims do not require that the

thickness of the magnetic layer vary across the entire radius, but merely from two points on the disk at a different radial position (as shown in Figure 1, above).

20. The rejection of claims 53 - 125 under 35 U.S.C § 102(b) and/or 103(a) – Bloomquist et al., either alone or in view of various references

The above noted rejection has been withdrawn because applicant(s) amendment(s) have set forth new limitations (e.g. "vary inversely") no longer anticipated, nor rendered obvious, by the above noted rejection; and in view of applicant(s) arguments, which have been found persuasive. Specifically, applicant(s) argue that the claimed invention does not disclose nor possess Mr or Mrt values which vary inversely to the coercivity, which is deemed to not be anticipated, nor rendered obvious, by the above noted rejection.

Applicants' arguments have been considered but are moot in view of the new grounds of rejection.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lal et al. (U.S. Patent No. 6,210,819 B1) and Ranjan et al. (U.S. Patent No. 5,840,394) both disclose that Mr, Mrt and Hc can vary in substantially the same manner depending on how the properties are made to vary, and hence the inverse behavior between the coercivity and Mr or Mrt is *not* an inherent function of these magnetic properties (*Figures of both references*).

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (703) 308-1737. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703) 308-2367. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Kevin M. Bernatz
Patent Examiner

December 11, 2003